

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application.

Claims 1, 3-24 and 32-36 are now present in this application. Claim 1 is independent.

Amendments have been made to the Drawings, claims 2 and 25-31 have been canceled, claims 32-36 have been added, and claims 1 and 3 have been amended. Reconsideration of this application, as amended, is respectfully requested.

Priority Under 35 U.S.C. § 119

Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. § 119, and receipt of the certified priority document in the international application.

Information Disclosure Citation

Applicants thank the Examiner for considering the references supplied with the Information Disclosure Statements filed January 31, 2006 and April 28, 2006, and for providing Applicants with initialed copies of the PTO-SB08 forms filed therewith.

Objection to the Drawings

The Examiner has objected to the drawings because Figure 8 is not clear.

In order to overcome this objection, Applicants are concurrently submitting Replacement Drawing Sheets for the Examiner's approval, which address each of the deficiencies pointed out by the Examiner. Accordingly, reconsideration and withdrawal of this objection are respectfully requested.

The basis for the Examiner's objection is not entirely understood. Is the objection that the clarity of the drawing is not sufficient or that it is not apparent (clear) from viewing the drawings what is being depicted? Applicant submits a replacement drawing having a greater resolution to improve the drawings clarity. Applicants submit that, when considering the

drawings, by referring to the specification, it is by clear what is being depicted. As such, it is respectfully requested that the outstanding rejection be withdrawn.

Rejection Under 35 U.S.C. § 102

Claims 1, 3-9, 12 and 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Hasei. This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that independent claim 1 has been amended to incorporate the subject matter of claim 2 to recite a combination of elements in a method of producing a three-dimensional structure, including the steps of providing a needle-shaped nozzle body having a fine inside diameter at a tip thereof, the nozzle supplied with a fluid material, arranging a substrate close to a tip of the nozzle to be close to a substrate, ejecting a fluid droplet having an ultra-fine diameter from the tip of the nozzle toward a surface of the substrate by applying a voltage having a prescribed waveform to the needle-shaped nozzle body via the electrode so as to make the droplet fly and land on the substrate, and thereby the droplet being dried during the flight to be a solidified substance at landing on the substrate, and ejecting subsequent droplets continually by applying the prescribed waveform voltage to the nozzle for the droplets being stacked on the solidified substance so as to form a grown three-dimensional structure.

Applicants respectfully submit that this combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including Hasei.

Claim 1 now recites ejecting subsequent droplets continually by applying the prescribed waveform voltage to the nozzle for the droplets being stacked on the solidified substance so as to form a grown three-dimensional structure, a limitation originally present in claim 2, now canceled. As claim 2 was not rejected as being anticipated by Hasei, the amendment to claim 1 overcomes the rejection of claim 1 as being anticipated by Hasei.

Rejections under 35 U.S.C. §103

Claims 1-6, 8-13, 23 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Danforth in view of Sachs et al. Further, claims 7 and 14-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Danforth in view of Sachs et al. and Hayes. These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that independent claim 1 has been amended to recite a combination of elements in a method of producing a three-dimensional structure, including the steps of providing a needle-shaped nozzle body having a fine inside diameter at a tip thereof, the nozzle supplied with a fluid material, arranging a substrate close to a tip of the nozzle to be close to a substrate, ejecting a fluid droplet having an ultra-fine diameter from the tip of the nozzle toward a surface of the substrate by applying a voltage having a prescribed waveform to the needle-shaped nozzle body via the electrode so as to make the droplet fly and land on the substrate, and thereby the droplet being dried during flight to be a solidified substance at landing on the substrate, and ejecting subsequent droplets continually by applying the prescribed waveform voltage to the nozzle for the droplets being stacked on the solidified substance so as to form a grown three-dimensional structure.

Applicants respectfully submit that this combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including Danforth and Sachs et al.

The claim now recites applying the prescribed waveform voltage to the nozzle for the droplets being stacked on the solidified substance so as to form a grown three-dimensional structure. Danforth utilized a filament 100 ejected from a dispensing head. A binder including the wax is melted and deposited on the platform 16 to form a photonic bandgap device. The device has parallel roads with a series of roads formed on each other. As noted at col. 10, lines 44-47, "As filament 10 is heated in dispensing head to a fluid state, the solid particle filled fluid material is metered at a controlled flow rate onto the receiving surface 17 of build platform 16."

There is no disclosure of dispensing the material by droplets. In fact, the parallel roads are best formed by a stream of material as the length far exceeds the height. Danforth does not disclose dispensing a fluid droplet or continually ejecting subsequent droplets by applying the prescribed waveform voltage to the nozzle for the droplets being stacked on the solidified substance so as to form a grown three-dimensional structure, as is claimed. The stacking of droplets forms a column structure, not the parallel roads disclosed by Danforth.

In addition, Sachs et al. disclose a voltage applied to the stream out of the nozzle. The claimed invention includes ejecting a fluid droplet having an ultra-fine diameter from the tip of the nozzle toward a surface of the substrate by applying a voltage having a prescribed waveform to the needle-shaped nozzle body via the electrode. No prior art discloses or suggest applying a voltage to the nozzle body.

Hayes does not cure the above noted deficiencies of Danforth and Sachs et al. Applicants respectfully submit that the combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including Hasei, Danforth, Sachs et al. and Hayes, for the reasons explained above. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

With regard to dependent claims 3-24 and 32-36, Applicants submit that these claims depend, either directly or indirectly, from independent claim 1 which is allowable for the reasons set forth above, and therefore claims 3-24 and 32-36 are allowable. In addition, these claims recite further limitations which are not disclosed or made obvious by the applied prior art references. Reconsideration and allowance thereof are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

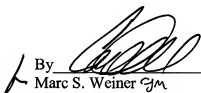
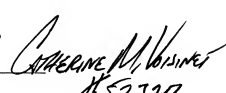
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Chris McDonald, Registration No. 41,533, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: October 9, 2009

Respectfully submitted,

By  
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